Small Business Innovation Research/Small Business Tech Transfer

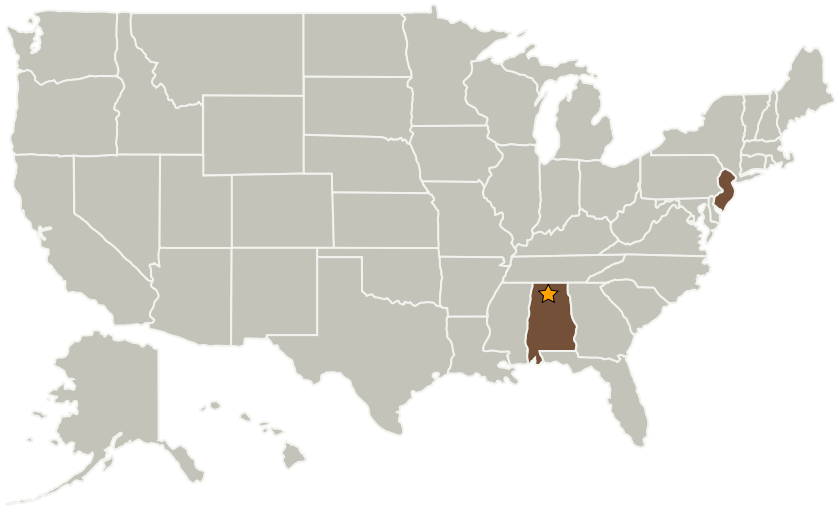
Silicon Germanium Alloy Photovoltaics for 1.06 Micron Wireless Power Transmission, Phase II

Completed Technology Project (2005 - 2007)

Project Introduction

Structured Materials Industries, Inc. proposes to develop SiGe photovoltaic technology that matches the Nd:YAG wavelength of 1.06 micron for insertion in future Wireless Power Transmission systems. Full development of the proposed technology will provide NASA with a low-cost, SiGe-based alternative to compound semiconductors. In Phase I of the program we have designed, fabricated and tested a SiGe photocell and demonstrated a 45% external quantum efficiency and a 6% power efficiency at the Nd:YAG wavelength of 1.06 micron. In Phase II we will further optimize the SiGe materials properties and the photocell device structure. In Phase III we will make the SiGe photocells commercially available to NASA's contractors and also market the deposition hardware.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Structured Materials Industries, Inc.	Supporting Organization	Industry	Piscataway, New Jersey

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

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Alabama	New Jersey

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.3 Power Management and Distribution
    - TX03.3.2 Distribution and Transmission